

R E M A R K S

The amendments to claim 1 and new claims 17 to 19 involving "calcium chloride," "magnesium chloride" and "calcium oxide" are supported on pages 7 and 8 of the specification and by Table 1 on page 40 of the specification.

The amendment to claim 1 of "capable of allowing poly-valent metal ions to be contained in the food" is supported by original claim 2.

The amendments to claims 1, 2, 11 and 12 of "compared with a content of acrylamide contained in food that is prepared without adding said at least one water-soluble poly-valent metallic compound" is supported on page 10, lines 9 to 16 of the specification.

Editorial revisions were made to claims 6 and 8.

The amendments to claim 7 are supported in the specification as follows: the definition of "Karintou" is supported in the specification on page 13, lines 4 to 5; the definition of "Agegyouza" is supported in the specification on page 13, lines 9

to 10; and the definition of "Yakigyouza" is supported in the specification on page 13, lines 10 to 11.

New claims 13 and 14 are supported by the last full paragraph on page 12 and the paragraph bridging pages 12 and 13 of the specification.

New claim 15 recites features of amended claim 1.

New claim 16 recites features of amended claim 2.

New claim 20 is supported on page 11, lines 3 to 5 of the specification.

Claim 7 was rejected under 35 USC 112, second paragraph, for the reasons set forth in the first paragraph on page 2 of the Office Action.

Claim 7 was amended to provide definitions of the terms "Karintou," "Agegyouza" and "Yakigyouza."

Withdrawal of the 35 USC 112, second paragraph rejection is thus respectfully solicited.

Applicants' present claim 1 is directed to a method of preparing a food having a decreased content of acrylamide by adding "at least one water-soluble poly-valent metallic compound

that is selected from the group consisting of "calcium chloride, magnesium chloride and calcium oxide" to the food.

Applicants' present claim 2 is directed to a method of preparing a food having a decreased content of acrylamide by adding "at least one water-soluble poly-valent metallic compound which is capable of allowing poly-valent ions selected from the group consisting of Al^{3+} and Fe^{3+} to be contained in the food before the cooking" to the food.

Claims 1 to 8 and 10 to 12 were rejected under 35 USC 102 as being anticipated by Elder et al. US 2004/0058054 for the reasons set forth beginning at the middle of page 2 and continuing to the first sentence on page 3 of the Office Action.

Elder et al. disclose a method for reducing acrylamide in thermally processed foods, in which asparagine (which is a precursor substance of acrylamide) is inactivated by adding a divalent cation (such as calcium lactate, calcium citrate or calcium malate) thereto (see paragraph [0011] of Elder et al.). However, Elder et al. do not disclose or suggest calcium

chloride, magnesium chloride or calcium oxide. Moreover, Elder et al. do not teach or disclose a trivalent cation.

Claims 1 to 4, 6 to 8 and 10 to 11 were rejected under 35 USC 102 as being anticipated by Kuechle et al. USP 6,436,458 for the reasons set forth on page 3 of the Office Action.

Kuechle et al. mention the addition of iron or calcium to a dough. However, Kuechle et al. do not teach or suggest a decrease in the acrylamide content in a food.

Withdrawal of the 35 USC 102 rejections is respectfully requested, since Elder et al. make no mention of a trivalent cation, and Kuechle et al. do not discuss a decrease in the acrylamide content in a food.

Claim 9 was rejected under 35 USC 103 as being unpatentable over Elder et al. for the reasons indicated at the middle of page 4 of the Office Action.

It was admitted in the Office Action that Elder et al. do not disclose forming semi-cooked food.

Claims 5 and 9 were rejected under 35 USC 103 as being unpatentable over Kuechle et al. for the reasons set forth at the

bottom of page 4 of the Office Action.

It was admitted in the Office Action that Kuechle et al. do not disclose semi-cooked food and frying, stir-frying or roasting.

Contribution of the Presently Claimed Invention to the Art

The presently claimed invention has provided a great "contribution to the art." At the time when the present application was filed, it was known that acrylamide is contained in a livestock feed cooked under heat, but a method of decreasing the acrylamide content using a water-soluble poly-valent metallic compound was not known. Also, for other kinds of food, a method of effectively decreasing the acrylamide content using a water-soluble poly-valent metallic compound was not known prior to the time when the present application was filed.

Acrylamide contained in food may pose a cancer risk (see Tareke et al., Chem. Res. Toxicol., 2000, 13, 517-522, a copy of which is of record).

In view of such a technical background, the inventors of the present application were the first to discover that acrylamide in a food can be effectively decreased by adding a water-soluble poly-valent metallic compound to a food (see page 2, line 22 to page 3, line 4 of the specification). The presently claimed invention was achieved based on this finding. Thus, the presently claimed invention is submitted to be an epoch-making new technology in that for the first time, the amount of acrylamide in a food product can be reduced by using a water-soluble poly-valent metallic compound.

The New Discovery of the Presently Claimed Invention

As discussed above, the present invention has been achieved based on the new finding that the acrylamide content in a food can be effectively decreased by adding a specific water-soluble poly-valent metallic compound to the food material.

The Unobviousness of the Applicants' Claim 1

Edler et al. mention the addition of a divalent cation such as calcium in the form of calcium lactate, calcium citrate or

calcium malate. However, Edler et al. do not disclose or suggest the addition of "calcium chloride, magnesium chloride or calcium oxide." Moreover, Elder et al. do not present any experimental data that verify that acrylamide was decreased by adding a divalent cation.

Kuechle et al. mention the addition of iron or calcium to a dough. However, Kuechle et al. do not teach or suggest a decrease in the acrylamide content in a food.

Calcium citrate and calcium malate, specifically disclosed in Elder et al., are not easily soluble in water as described in any general chemical dictionary. Therefore, calcium citrate and calcium malate are not able to release calcium ions, and therefore they are not within the scope of the water-soluble poly-valent metallic compounds recited in applicants' claims.

Calcium lactate, specifically disclosed in Elder et al., does not exhibit a high acrylamide content decreasing effect, as seen in the present specification on page 39, TABLE 1, Inv. 3.

In contrast to Elder et al., calcium chloride, magnesium chloride and calcium oxide, as recited in applicants' claim 1,

exhibit a high acrylamide content decreasing effect, as evidenced in Examples 1, 5 and 8 of the present specification.

Therefore, it is respectfully submitted that a person of ordinary skill in the art would not arrive at the concept of using calcium chloride, magnesium chloride or calcium oxide, which are water-soluble and have a high acrylamide content decreasing effect, based on the description of Elder et al., which disclose the use of water-insoluble calcium citrate and calcium malate. In addition, it is respectfully submitted that a person of ordinary skill in the art would not be able to predict from Elder et al. the advantageous results of the presently claimed invention that the acrylamide content can be effectively decreased by the use of calcium chloride, magnesium chloride or calcium oxide.

Moreover, it is respectfully submitted that one of ordinary skill in the art would not achieve the presently claimed invention based on the disclosure of Kuechle et al., since Kuechle et al. do not teach or suggest a decrease of the acrylamide content in a food.

The Unobviousness of the Applicants' Claim 2

Elder et al. disclose the use of a divalent cation, but make no mention of a trivalent cation. Further, Elder et al. do not present any experimental data verifying that the content of acrylamide was actually decreased by adding a divalent cation. Therefore, it is respectfully submitted that one of ordinary skill in the art would not expect an acrylamide decreasing effect obtained by using a trivalent cation-releasing compound, based on the disclosure of Elder et al.

Moreover, it is respectfully submitted that one of ordinary skill in the art would not expect an acrylamide decreasing effect obtained by using a trivalent cation-releasing compound, based on the disclosure of Kuechle et al., which do not at all disclose or suggest a decrease of the acrylamide content of a food.

The Unobviousness of Applicants' New Claims 15 and 16

New claims 15 and 16 are each directed to a method for decreasing an acrylamide content of food. Neither of the references disclose a decrease of the acrylamide content in a

food by using a compound recited in applicants' claims 15 or 16.

Withdrawal of the 35 USC 103 rejections is therefore respectfully requested.

Reconsideration is requested. Allowance is solicited.


An INFORMATION DISCLOSURE STATEMENT is being submitted concomitantly herewith.

Enclosed is a check for \$200 in payment of one additional independent claim.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

Frishauf, Holtz, Goodman
& Chick, P.C.
220 Fifth Avenue, 16th Fl.
New York, NY 10001-7708
Tel. Nos. (212) 319-4900
(212) 319-4551/Ext. 219
Fax No.: (212) 319-5101
E-Mail Address: BARTH@FHGC-LAW.COM
RSB/ddf



Richard S. Barth
Reg. No. 28,180

Encs.: (1) INFORMATION DISCLOSURE STATEMENT
(2) Check for \$200